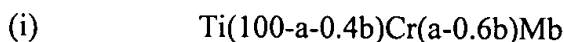
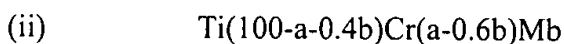


B → --22. A process for producing a hydrogen storage metal alloy having a main phase with body-centered cubic structure wherein the body-centered cubic structure phase enables adsorption and desorption of hydrogen, comprising the steps of:

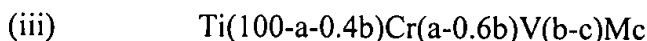
(1) providing a starting mixture which has a composition of the following general composition formula:



wherein M is vanadium (V), provided that  $20 \leq a \text{ (at\%)} \leq 80$ , and  $0 < b \text{ (at\%)} < 10$ ; or

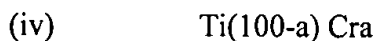


wherein M is at least a member selected from molybdenum (Mo) and tungsten (W), wherein  $20 \leq a \text{ (at\%)} \leq 80$ ,  $0 < b \text{ (at\%)} < 5$ , and when M is W said metal alloy has a hydrogen storage capacity of at least 2.6 mass % or more; or



wherein M is at least a member selected from molybdenum (Mo) and tungsten (W), wherein  $20 \leq a \text{ (at\%)} \leq 80$ ,  $0 \leq b \text{ (at\%)} \leq 10$ , and  $0 \leq c \text{ (at\%)} < 5$ , excluding the case where

(1)  $b = 0$  and  $c = 0$  and (2)  $b = 10$  and  $c = 0$ ; or



wherein  $20 \leq a \text{ (at\%)} \leq 80$ ;

(2) melting the starting mixture to form a heated homogeneous alloy;

(3) maintaining the heated homogeneous alloy at a temperature within a range just below the melting point of the alloy for a predetermined time; and

(4) rapidly cooling the alloy from step (3) in iced water.

23. The process of Claim 22 wherein melting and solidification operations are carried out repeatedly for predetermined times in step (2).

24. The process of Claim 22 wherein the predetermined time in step (3) is from 1 minute to 100 hours.

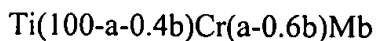
25. The process of Claim 22 wherein in step (3) the alloy is kept at the temperature of at least 1400°C or higher within a range just below the melting point of the alloy.

26. The process of Claim 22 wherein the starting mixture contains an additional element X admixed at its atom % concentration,  $d$  (at%), ranging within  $0 \leq d \text{ (at\%)} \leq 20$  and includes at least one or more other elements selected from the group consisting of Al, Ge, Ga, Si, Au and Pt.

27. The process of Claim 22 wherein the starting mixture contains an additional element T admixed at its atom % concentration,  $e$  (at%), ranging within  $0 \leq e \text{ (at\%)} \leq 10$  and includes at least one or more other elements selected from the group consisting of Nb, Ta, Mn, Fe, Al, B, C, Co, Cu, Ga, Ge, a lanthanoid metal, N, Ni, P, and Si.

28. The process of Claim 26 wherein the starting mixture contains an additional element T admixed at its atom % concentration,  $e$  (at%), ranging within  $0 \leq e \text{ (at\%)} \leq 10$  and includes at least one or more other elements selected from the group consisting of Nb, Ta, Mn, Fe, Al, B, C, Co, Cu, Ga, Ge, a lanthanoid metal, N, Ni, P, and Si.

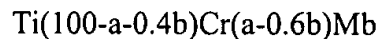
29. The process of Claim 22 wherein the starting mixture has a composition of the following general composition formula:



wherein M is vanadium (V), provided that  $20 \leq a \text{ (at\%)} \leq 80$ , and  $0 < b \text{ (at\%)} < 10$ .

30. The process of Claim 29 wherein a level of the constituent element V contained in the mixture is within a range of  $6 \pm 2$  at %.

31. The process of Claim 22 wherein the starting mixture has a composition of the following general composition formula:



wherein M is at least a member selected from molybdenum (Mo) and tungsten (W), wherein  $20 \leq a \text{ (at\%)} \leq 80$ ,  $0 < b \text{ (at\%)} < 5$ , and when M is W said resulting metal alloy has the hydrogen storage capacity of at least 2.6 mass % or more.

32. The process of Claim 31 wherein a level each of the constituent element Mo and/or W contained in the starting mixture is within a range of  $3 \pm 1.5$  at %.

33. The process of Claim 22 wherein the predetermined time in step (3) is from 1 minute to 2 hours.

34. The process of Claim 24 wherein in step (3) the alloy is kept at the temperature of at least  $1400^{\circ}\text{C}$  or higher and just below the melting point of the alloy.

35. The process of Claim 33 wherein in step (3) the alloy is kept at the temperature of at least  $1400^{\circ}\text{C}$  or higher and just below the melting point of the alloy.

36. The process of Claim 35 wherein melting and solidification is carried out repeatedly for predetermined times in step (2).

37. The process of Claim 22 wherein the predetermined time range in step (3) is from 1 minute to 1.9 hours.